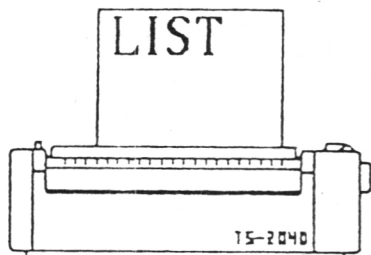


# L.I.S.T.ing Newsletter

The newsletter of the Long Island Sinclair Timex group.

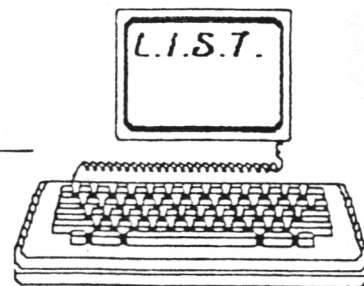
\*\*\* Incorporating NYTSE \*\*\*

NEXT MEETING APRIL 9, 1989



Issue: MARCH 1989  
MONTH YEAR

*Exp. date is printed  
on top line after  
your name.*



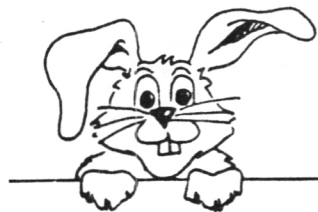
L.I.S.T. membership for one year is \$15.00. Library tapes are available. Write to the below address for further information.

L.I.S.T.  
5 Peri Lane  
Valley Stream, NY 11581



TO:

Don Lambert JAN/90  
3310 Clover Dr. S  
Cedar Rapids, IA  
52404

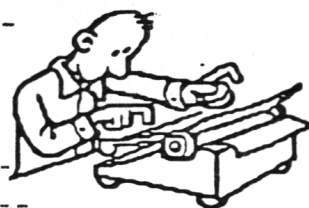


FIRST CLASS MAIL  
DATED MEETING NOTICE  
Please DON'T delay!!!

{1}

## LIST OFFICERS

PRES. HARVEY RAIT  
TRES. ROBERT MOLLOY  
REC. SEC. STEVE KAYE  
EDITOR. FRED STERN  
LIBR. TOM SKAPINSKI



PLEASE SEND SUBMISSIONS OR  
INQUIRIES TO:

LIST  
MR. HARVEY RAIT  
5 PERI LANE  
VALLEY STREAM, N.Y. 11581

send us an article!

## COMING EVENTS:

APRIL 9, 1989 LIST MEETING  
APRIL 10, 1989 N73E MEETING

MEETING MINUTES  
MARCH 12, 1989

THE MEETING STARTED AT 2:15PM  
BOB GILDER HAS FIXED THE DISC  
DRIVES OF THE AERCO UNIT.  
THE DISC DRIVES, POWER SUPPLY  
AND AERCO INTERFACE WILL BE  
AUCTIONED OFF AT THE NEXT  
AUCTION/SWAPMEET AT THE JUNE  
MEETING.

A \$5.00 ENTRANCE FEE WILL BE  
CHARGED TO NON-MEMBERS WHO  
ATTEND FUTURE AUCTIONS AND  
SWAPMEETS AT LIST.

FRED STERN READ THE LETTER THAT  
WAS RECEIVED FROM TIMEX/SINCLAIR  
PUBLIC DOMAIN SOFTWARE.  
THE LETTER EXPLAINED THAT  
T/S.P.D.S. HAS MERGED WITH THE  
S.N.U.G. SOFTWARE LIBRARY TO  
GIVE THE TIMEX/SINCLAIR USER A  
LARGER SELECTION OF PROGRAMS TO  
CHOOSE FROM.  
PROGRAMS ARE PRESENTLY AVAILABLE  
FOR THE TS1000, TS2068 AND THE  
QL. PROGRAMS FOR THE Z88 ARE  
PENDING INTEREST IN THE MACHINE.  
THE SOFTWARE LIST IS BEING  
REVIEWED FOR PURCHASES FOR THE  
LIST LIBRARY. THE LETTER AND  
SOFTWARE LIST WILL BE PRINTED  
IN THE NEXT NEWSLETTER.

THE CLUB DECIDED NOT TO PURCHASE  
A P.C. EMULATOR FOR THE QL.  
THIS DECISION IS BASED ON THE  
FACT THAT THE EMULATOR WILL NOT  
CONVERT P.C. SOFTWARE TO QL  
FORMAT, AS SOME CLUB MEMBERS  
MISTAKENLY THOUGHT IT WOULD DO.

STONEY WANTS TO KNOW IF ANYONE  
HAS SEEN AN ARTICLE ABOUT  
INTERFACING THE QL TO THE Z-80  
STANDARD BUS.  
STONEY WANTS TO DEVELOP SOFTWARE  
FOR TRANSLATING 8088 CODE TO  
6800 CODE. THE POSSIBILITY  
EXISTS FOR INTERFACING TS1000  
OR TS2068 TO QL.

FRED STERN REPORTED THAT WE MAY  
HAVE 2 NEW MEMBERS.  
ONE WHO ANSWERED THE AD IN THE  
YANKEE TRADER.

## LETTERS FROM MEMBERS

PAUL DONNELLY WROTE TO SAY HE  
HAS BACK ISSUES OF LISTING FOR  
THE LIBRARY. PAUL HAS BEEN IN  
TOUCH WITH NAZIR IN CHICAGO, WHO  
IS DOING WELL.

CHARLES J. MUSUMECI WROTE TO ASK  
1. WHERE CAN I GET A MEMORY PACK  
TAPE MACHINE, ETC?  
2. DOES ANYONE HAVE ANY BOOKS TO  
LEARN PROGRAMMING?  
IF YOU CAN HELP CHARLES, CONTACT  
HIM AT:  
COLER MEMORIAL HOSPITAL WARD A42  
ROOSEVELT ISLAND, N.Y. 10044

## COMPUTERFEST REVIEW

BOB GILDER AND BOB HALLOY  
REPORTED ON THE COMPUTERFEST AT  
THE ROYCE CARLON HOTEL.  
THE PLACE WAS JAMMED WITH PEOPLE  
AND NOT AS MUCH MERCHANDISE AS  
EXPECTED.  
THIS COMPUTERFEST WAS NOT AS  
GOOD AS THOSE ATTENDED IN THE  
PAST.

## FINAL BUSINESS

HARVEY RECOMMENDED BREAKING UP  
THE LIST SOFTWARE LIBRARY INTO  
2 SECTIONS. EACH SECTION, ONE  
FOR TS1000, THE OTHER FOR TS2068  
/SPECTRUM WILL BE HANDLED BY A  
VOLUNTEER CLUB MEMBER.  
FRED STERN VOLUNTEERED TO TAKE  
OVER THE TS1000 SECTION.

## CLASSIFIEDS

THIS CLASSIFIED SECTION IS  
AVAILABLE TO ALL LIST MEMBERS  
FREE OF CHARGE.  
THE ONLY RESTRICTION IS THAT  
IT IS TO BE USED ONLY FOR THE  
SEEKING, SELLING OR SWAPPING  
OF SINCLAIR, TIMEX OR MICROACE  
COMPUTER EQUIPMENT, PERIPHERALS  
AND SOFTWARE.  
LISTING, LIST, AND ITS OFFICERS  
DO NOT ENDORSE, WARRANTY, OR  
GUARANTEE ANY OF THE ITEMS  
LISTED IN THIS CLASSIFIED  
SECTION

I AM SEEKING 2 OR MORE HOME ROM  
CHIPS, P/N 818200, U16 IN THE  
TS2068. CALL FRED STERN  
516-737-0963.

## A FINAL WORD

MY NAME IS FRED STERN, AND I AM  
THE EDITOR OF THIS EDITION OF  
LISTING.  
ONCE AGAIN I THANK TOM SKAPINSKI  
AND STEVE KAYE FOR THEIR  
ASSISTANCE IN GETTING THIS NEWS  
LETTER TOGETHER.  
THIS MONTH'S NEWSLETTER HAS THE  
FINAL SECTION OF WILLIAM  
PEDERSONS ARTICLES ABOUT RAM  
AND ROM IN THE TS2068.  
I FINALLY WANT TO THANK ALL YOU  
MEMBERS WHO HAVE CONTRIBUTED  
ARTICLES TO LISTING.  
YOUR ARTICLES WILL BE PUBLISHED  
IN UP COMING ISSUES.

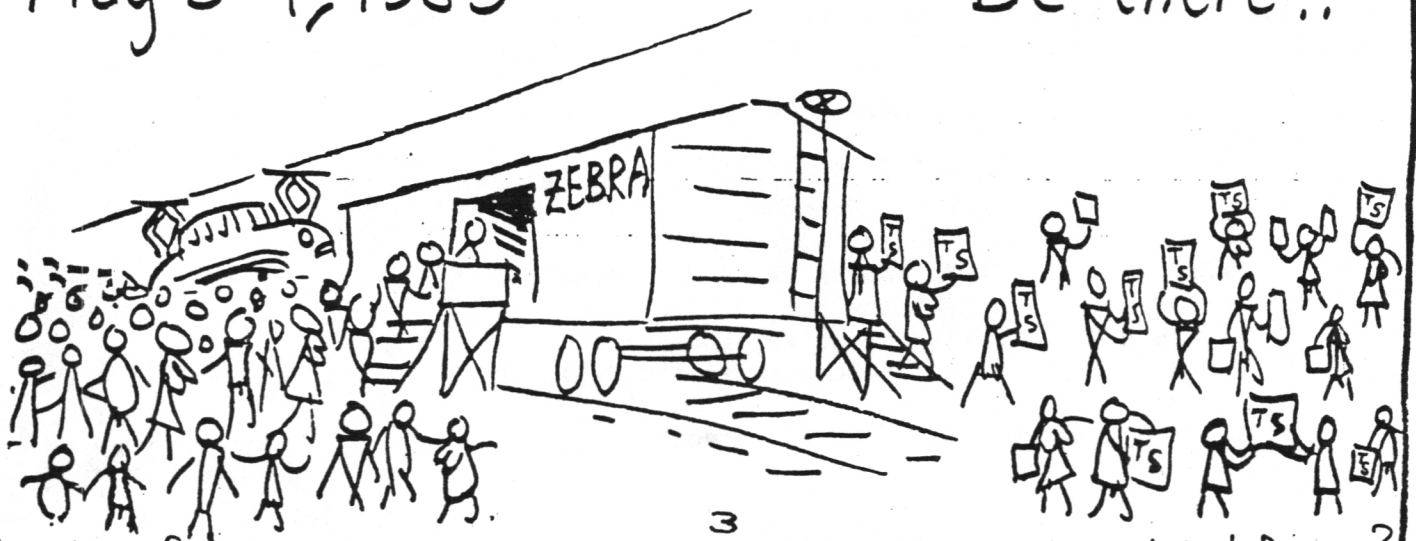
# ZEBRA.TS.CLOSEOUT

AT THE C.A.T.S. CAPITALFEST

Zebra Systems are stepping down from the Timex-Sinclair business, but they still have a boxcarful of all your fav & fat TS goodies. They're rolling that boxcar to the C.A.T.S. CapitalFest. They'll throw open the doors and let you just buy them out! So, this is it, the TS blowout Sale of the decade. The Zebra TS Closeout! At the C.A.T.S. CapitalFest!

May 5-7, 1989 .

Be there!!



3

What's left over after the fest goes to Arthur Kill. You don't want that, do you?

PAXMINUS FECIT

## IMPROVED TS2068 INTERNAL ROM BYPASS

A major barrier to fixing the problems in INTERNAL ROM is one of access. Even though the ROM is socketed, you still have to open the case. This risks damage; and even then, replacing ROM with EPROM requires wiring modifications. This article shows how to replace HOME ROM and EXROM without touching a screw.

It is not necessary to replace ROM with EPROM. Battery backed up static RAM will do as well if equipped with a READ ONLY switch. That way the RAM can be written and then switched over to write-protect state. The saving in time over burning EPROM is impressive, however, you will probably elect to use EPROM once corrections have been made.

When expansion banks are connected, they assume priority by driving the BE (Bus Enable) signal low (using open collector gates). This is applied at the rear connector and sensed by the SCLD, which then shuts down all LOCAL memory (except for display memory while it is using it). It includes ROSCS, EXROM and ROMCS signals which enable DOCK (cartridge), EXROM and HOME ROM (memory chips) respectively. DOCK and EXROM are not true expansion banks in the sense that they have lower priority than external BANK #0 and #254. The "missing" three banks in TIMEX documentation are not really missing at all. The much-touted BEU would have contained a new operating system using them.

The design presented here has very carefully retained the ability to attach a non-TIMEX BEU with expansion slots -- or any other system your heart might desire.

Many users will not initially have a back-plane with expansion slots. The preferred location for ROM bypass would seem to be the cartridge slot; however, locating it there disclosed a bug which involved BE signal conflict on rare occasions.

### HOME ROM BYPASS (See Figure 1)

HOME ROM is enabled by the SCLD using a signal named ROMCS. Unlike EXROM and ROSCS, this signal is not available externally.

Our task is to disable HOME ROM, and then enable an external equivalent.

The first is easy. Any time HOME ROM is being addressed, bus signal BE can be driven low. This suppresses ROMCS.

The second is a bit more complicated, but not difficult. HOME ROM is addressed whenever NOTHING ELSE is! It is a process of elimination.

HOME ROM is NOT being addressed when:

1. A14 or A15 is high. (CHUNKS 2 thru 7 addressed),
2. EXROM is low (EXROM addressed),
3. ROSCS is low (DOCK bank addressed),
4. MREQ is high (NOP, I/O or INTERRUPT CYCLE),
5. BE is low (Expansion bank active),
6. RD is high (Write cycle in process) or
7. RFSH is low (Applies to some static RAM).

What logic could be easier to implement?





Before attempting operating system revisions, a copy of existing code can be used in the bypass. This is an excellent test of bypass circuitry. No change in operation should be detectable when a bypass card is present, or absent.

### EXROM REPLACEMENT (See Figure 2b)

EXROM presents an interesting problem. It is enabled by the EXROM signal (not BANK #254), but lack of complete internal address decoding results in false images occurring in all other chunks, not just CHUNK #0. If we had an expansion BANK #254, it would have higher priority than the internal chip -- but that requires a bank switching controller and usually a back-plane.

The simple solution is to physically remove the EXROM chip from inside and remount it with full address decoding on a board. Though it is necessary to open the case, no wiring changes are needed and the chip can always be put back.

A tremendous advantage is gained when this is done. The false images are gone, making seven CHUNKS of EXROM available for use as either RAM or EPROM as desired. Again, this can be tested for no change in operation before and after the change.

### EXROM BYPASS (See Figure 2a)

Lacking a bank switching controller, it would seem impossible to use the BE signal to disable the internal EXROM chip and still have an external bypass take over. The presence of the EXROM signal from the SCLD would try to cancel itself, resulting in oscillation.

If the initial presence of EXROM signal can be latched on the bypass board, and then BE is switched low, this can be avoided.

NOW WE HAVE A WAY TO LEAVE THOSE SCREWS UNTOUCHED.

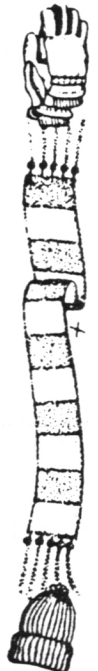
We need to reset the latch before the next instruction comes along, when an external bank exerts priority, at power-up and REFRESH.

The extra cost of a safe approach might make the risk in removing the EXROM chip seem worth while. That is what Figure 2b is for.

This is NOT RECOMMENDED unless you are a confirmed hacker!

### BYPASS BOARD FEATURES AND OPTIONS

1. The FULL rear connector is repeated so other accessories can be used, including a bank switching controller and back-plane.
2. Use two 28 pin sockets for "HOME ROM" and two for "EXROM". That way you can use RAM chips before burning EPROMS and then plug the EPROM chips in as direct replacements for RAM.
3. When using EPROM, a 27128 chip can be used for "HOME ROM", leaving one socket empty.
4. When using ROM for "EXROM", use 43256 chips for reasons of economy. (32K\*8bits)
5. "EXROM" memory from 0 to 32K is assumed to be 43256 "ROM" or 27256 EPROM.
6. Write-protect switches are used when RAM takes the place of ROM. One covers "HOME ROM", the other CHUNKS #0 thru #3 of "EXROM".
7. Other switches allow RAM to be initialized (written) before being configured as "ROM". This allows HOME ROM and EXROM to be copied to external RAM.



8. Jumpers are provided to eliminate battery backup once EPROMS have been installed in place of write-protected ROM.

Because bypass operations need BE to operate, and external banks have higher priority, the board must monitor BE' to avoid conflict. The circuit shown breaks into the BE signal line to make this possible.

The average user wants better operation, more memory, more gadgets and software which makes use of them. Who can blame them, but not everyone has the technical knowledge and skill to do it on their own.

The design presented here is hereby declared PUBLIC DOMAIN, with the blessings of The WIDJUP Co. Suppliers are free to manufacture, but it is strongly suggested that The WIDJUP Co. be consulted when doing so.

THIS BYPASS DESIGN STANDS ALONE.

Nevertheless, RGB video, analog signals, external power sources, bus repowering and attachment of back-planes are features best located on the same board. Provisions for adding features would satisfy those not yet ready for slot expansion.

PROCEDURE	S1 SWITCH SETTINGS						NOTES
	a	b	c	d	e	f	
=====							
NORMAL OPERATION:							ROM/EPROM EPROM
"HOME":							0-8,8-16K; 0-16K
Using EPROM	ON	ON	OFF	---	---	---	(PGM High)
Using RAM as "ROM"	ON	ON	OFF	---	---	---	0-16K Read Only
"EXROM":							0-32,32-64K;0-32K
Using EPROM & RAM	---	---	---	ON	ON	ON	32-64K RD/WR
Using RAM as "ROM"	---	---	---	ON	ON	ON	0-32K Read Only
EXROM Removed	---	---	---	OFF	na	na	0-32K Read Only
-----							
COPYING INTERNAL ROM:							
HOME to "HOME" RAM:	OFF	OFF	ON	---	---	---	Write Only 0-16K
EXROM to "EXROM" RAM:	---	---	---	OFF	OFF	OFF	Write Only 0-8K
EXROM Removed	---	---	---	na	na	na	Done Externally
-----							
MAKING "ROM" CHANGES:							
"HOME":	ON	ON	ON	---	---	---	Read/Write 0-16K
"EXROM":	---	---	---	ON	ON	OFF	Read/Write 0-32K
EXROM Removed	---	---	---	ON	na	na	Read/Write 0-32K
=====							

It is quite easy to copy internal ROM to the bypass board.

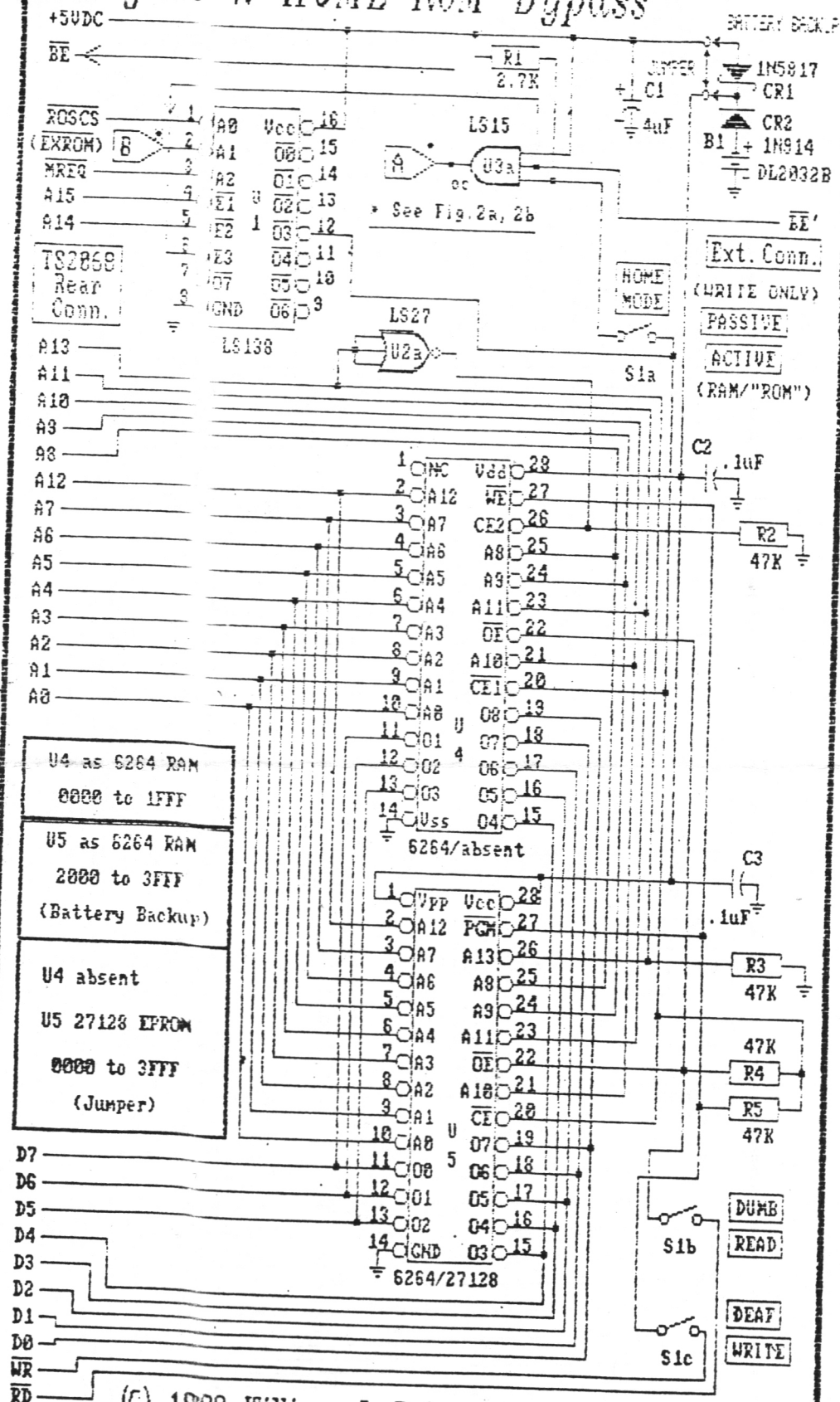
10 REM Copying HOME ROM	10 REM Copying EXROM
20 FOR N = 0 TO 16383	20 SAVE "EXROM" CODE 0, 8196
30 POKE N, PEEK N	30 LOAD "EXROM" CODE 0, 8196
40 NEXT N	



William J. Pedersen The WIDJUP Co.  
1120 Merrifield S.E.  
Grand Rapids, MI 49507

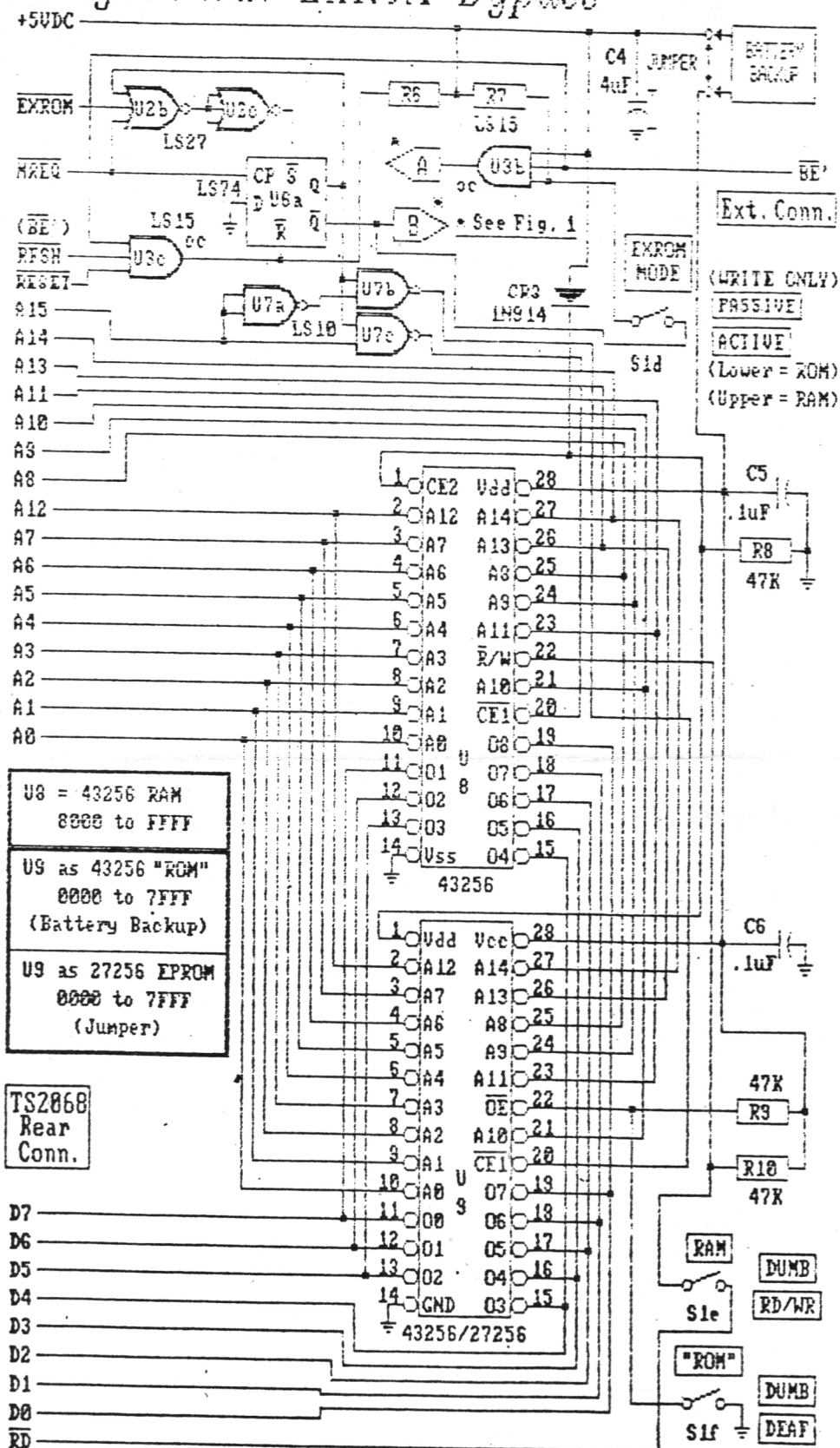


# Figure 1: HOME ROM Bypass



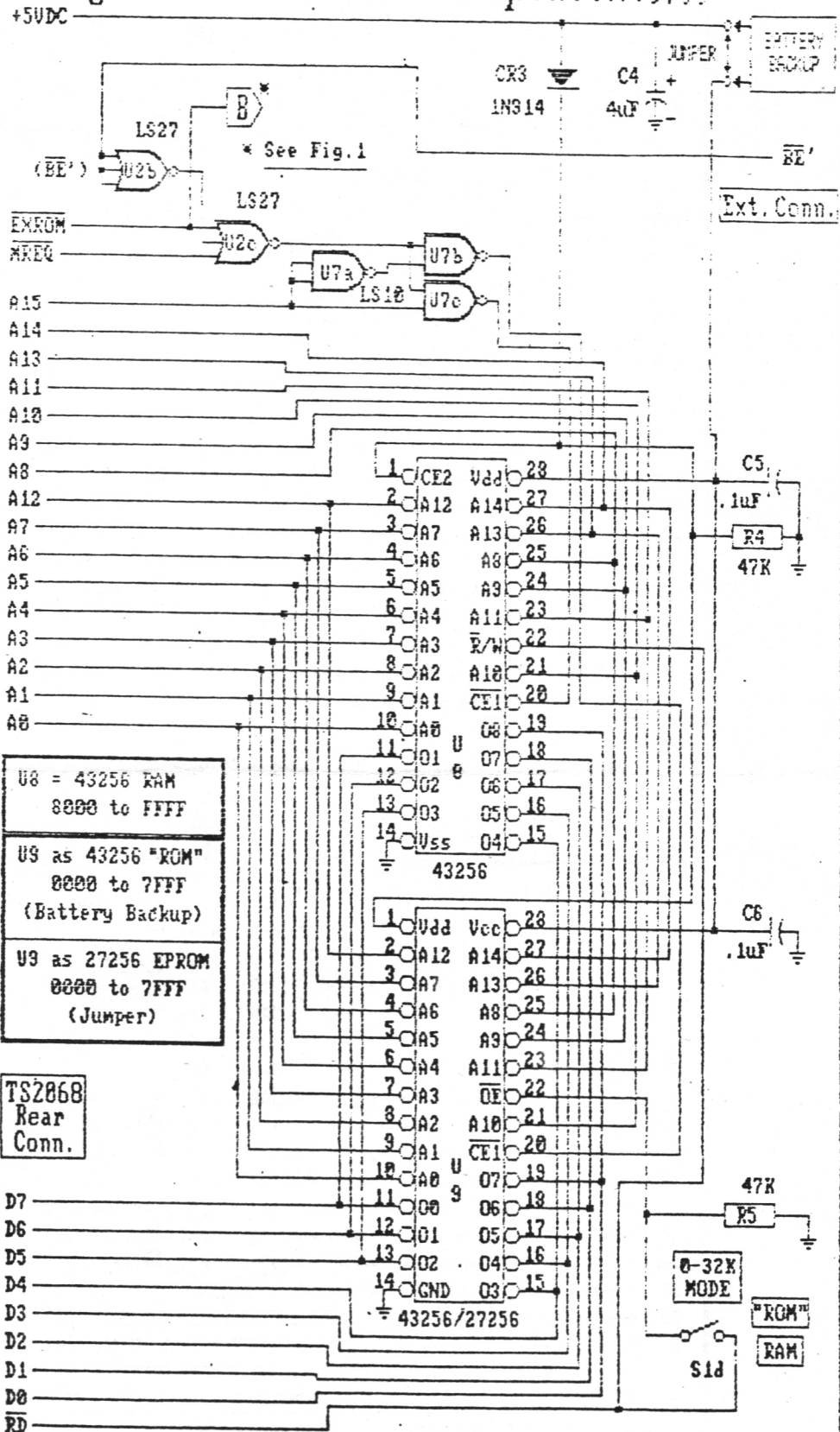
(C) 1988 William J. Pedersen

# Figure 2a: EXROM Bypass



(C) 1988 William J. Pedersen

# Figure 2b: EXROM Replacement

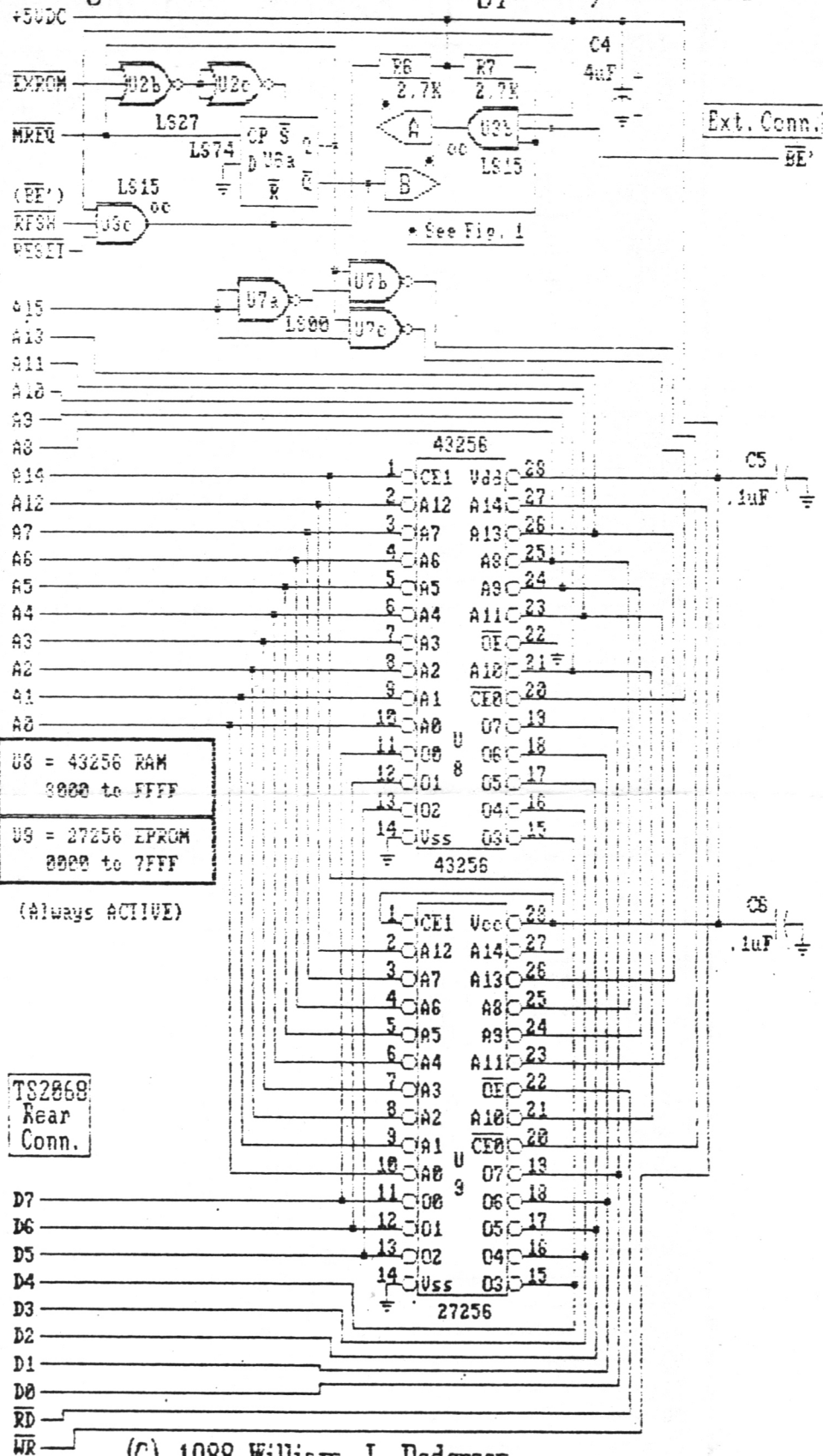


(C) 1988 William J. Pedersen

(NOT RECOMMENDED)



# Figure 2c: EXROM Bypass / EPROM



(C) 1988 William J. Pedersen

# THE WADGUA BUSS

The following is a 105 pin connector back-plane version of the buss currently employed by The WADGUA Co. to implement expanded bank switching and I/O.

(TOP VIEW, CONNECTOR END OF CASE)

TS2058	IBM	BACK-PLANE	IBM	TS2058
B7, B8 PUR GND	GND	B1 105:106	P1 <b>IRQ CHECK</b>	<b>NR1</b> A15
A2 <b>RESET</b> /RESET	DRV	B2 103:104	P2 00	00 A17
B4 +5 VDC	+5 VDC	B3 101:102	P3 01	01 A16
	* ↑	B4 09:100	P4 02	02 A15
	-5 VDC	B5 07:008	P5 03	03 A10
(FDD DATA)	↑ DRO2	B6 05:06	P6 04	04 A13
	-12 VDC	B7 03:04	P7 05	05 A11
(SCLDOM LEED)		B8 01:000	P8 06	06 A10
	+12 VDC	B9 00:000	P9 07	07 A4
B9, B10				
A2, B10 SIG GND	GND	B10 07:08	A10 I/O CH ROY	<b>NR2</b> B12
	<b>MEM1</b>	B11 03:04	A11 DEN	<b>BUSACK</b> B1
	<b>MEM2</b>	B12 01:02	A12 A16	
	<b>MEM3</b>	B13 00:01	A13 A15	
	<b>MEM4</b>	B14 00:00	A14 A17	
	<b>MEM5</b>	B15 00:00	A15 A16	
	<b>MEM6</b>	B16 00:00	A16 A15	A156 B14
	<b>MEM7</b>	B17 00:00	A17 A14	A148 B13
	<b>MEM8</b>	B18 00:00	A18 A13	A138 B12
A26 <b>RESH8</b>	<b>DRCK0</b>	B19 00:00	A19 A12	A128 B17
	<b>DRCK1</b>	B20 00:00	A20 A11	A118 B16
	<b>DRCK2</b>	B21 00:00	A21 A10	A108 B15
(CENTRONICS)	↑ IRQ7	B22 00:00	A22 A9	A98 B14
(FDD STATUS)	↑ IRQ6	B23 00:00	A23 A8	A88 B13
	* ↑ IRQ5	B24 00:00	A24 A7	A78 B12
(R52320)	↑ IRQ4	B25 00:00	A25 A6	A68 B11
	* ↑ IRQ3	B26 00:00	A26 A5	A58 B10
(FDD DATA)	<b>DRCK2</b>	B27 00:00	A27 A4	A48 B9
(DMA END)	T/C	B28 00:00	A28 A3	A38 B8
(ADDR TRANSIENT)	ALE	B29 00:00	A29 A2	A28 B7
B4 -5 VDC	+5 VDC	B30 00:00	A30 A1	A18 B6
	OSC	B31 00:00	A31 A0	A08 B5
B7, B8 PUR GND	GND	B32 00:00		A08 B4
B11 <b>RDR</b>				<b>NRB</b> B3
B12 <b>TRGB</b>				<b>NRB</b> B2
B13 <b>NR</b>				<b>NRB</b> B1
		B1 07:08	A1	
		B16 03:04	A16	
A23 <b>BUSR0</b>		1:2		<b>A7RB</b> A3

## NOTES:

1. "/" Signifies inversion of the TS2058 output signal.
2. "■" Signifies active low.
3. "↑" Signifies active on rising edge.
4. "\*" Signifies available but not used by basic cards.
5. Back-plane pins 3 thru 38 are mapped as AT functions.

## INTERRUPT HANDLING

IRQ2, IRQ3 and IRQ5 may optionally be assigned to the TS2058. In addition, the AT extension can be used to get a full parallel polled interrupt status byte. This is the current method. No serial polling is done.

Operation is in IM2 with with bit 0 forced to 0 for all interrupt vector requests. Active vectors are interleaved to make two extra bytes available for each. When DMA operations are to or from HOME CHUNK#2 or 3, the timing is dependent on a vector provided by the SCLD.

## ADDRESS EXPANSION

Address lines A16 thru A19 are provided to the PC/XT part of the buss, and A20 thru A23 to the AT section. For the most part these addresses are provided by the CCOT bank switching system.

**ROSCS** and **EXROM** are special cases.

These two banks are extensions to those in LOCAL memory.

**ROSCS** forces the value 255. (The complement of 0.)

The BANK# of **EXROM** is 254, and this value is forced.

Normal BANK#'s from 1 thru 253 have assignable values.

## CALCULATE A SINKING FUND

Dick F. Wagner

Sinking funds, an amount established or accumulated for a specific purpose, may be a part of a savings account or an investment plan. Consider calculating a part of monthly savings/investment to determine when a specific amount of accumulated interest can be withdrawn to meet a specific need at a specific time. How much must be dedicated to the account to generate the interest required?

This basic equation is the one to use:

$$S = A(r) / ((1+r)^n - 1)$$

where S is the amount of monthly payment into the account

A=amount accumulated (your need)

r=interest in %/(12\*100)

n=number of periods as months

This equation is reworked to fit the program needs:

```
100 INPUT "How much do you need to
accumulate? $";AMT
110 INPUT "What is the annual
interest rate in %";R;" of the
investment or savings account?"
115 LET r=(R/(12*100))
120 INPUT "How many months for the
investment to run to meet your need?"
;n
130 LET S=AMT*(r/((1+r)^n-1))
140 PRINT "You will need to deposit
$";S;" monthly for ";n;" months to
produce $";AMT
150 INPUT "If the amount does
accumulate to exactly cents then
ENTER 'F'. If not then ENTER 'C';x$
160 IF x$="F" THEN STOP: IF x$="C"
THEN GOTO 170
170 INPUT "If your deposits are not
exactly the amount to the last cent,
use the next higher cent and INPUT
the new amount $";t
200 REM change equation to
205 REM A=t*(((1+r)^n)/r)
210 REM recalculate the last
payment
220 LET A=t*(((1+r)^(n-1)-1)/r)
225 REM last payment LP=Amount
AMT-(A*(1+r))
230 LET LP=AMT-(A*(1+r))
```

240 PRINT "You will be making
payments of \$";t;" for ";(n-1);"
months, and a last payment of
\$";LP;" to produce \$";AMT;" in
interest".

## OLIGER SAFE V 2.5 DISK OPERATING SYSTEM

Dick Wagner

CONTINUED FROM THE DECEMBER ISSUE--

NMI (non maskable interrupt) SAVE is accomplished by pressing the NMI button and any numbered key from 1-0. Loaded as an ABS type.

NMI SCREEN\$ COPY accomplished by pressing the NMI switch and the "Z" key.

NMI SCREEN\$ SAVE is accomplished with the NMI switch plus keys Q, W, E, R, and T to give these saves the names A, B, C, D, and E, respectively.

NMI BREAK (KEY) uses the NMI switch and then "C" to return to BASIC after a NMI save.

NMI RESET is used for a system reset. Hold the "N" key down and then press the NMI switch.

MOVE/ commands (3) as "name" type, to copy a file to the next drive; "name" type TO n, (0-3) moves the named file to the defined drive (in either direction); MOVE/, copies the whole disk to the next drive.

RESTORE/ commands (3) RESTORE/S, resets to power-on defaults; "name" type TO "newname" changes a file name; "new disk name" changes the disk name.

COPY/ command copies the current display file to a large printer. Also copies to a 2040 printer.

ERASE/"name" type, removes a file from the disk. All later files are moved up in position. An old name can be reused.

VERIFY/"name" type, checks to see that the file is saved properly. Used to make a duplicate verification as all files are so verified automatically.

>>>>